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MANUAL NO. 01

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The Zen Triode Amplifier

MODEL SE84CKC

■DECWARE

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DESCRIPTION

The SuperZen is our best version of the famous Zen Triode Amplifier that practically started Decware in the mid 1990's.

It's a hand wired amplifier featuring old school point-to-point assembly with no circuit boards and the very best high-end solders.

It has the least number of internal parts and solder nodes possible so that when combined with it's excellent design and ultra quality USA made parts, it's frankly a little force to reckon with!

The SuperZen is a stereo amplifier running in pure class A using one single ended triode per channel to create the most beautiful and powerful 2 watts you've ever heard.

The amp features a volume control and inputs for two sources via a silver selector switch. This means that preamps are optional. It will run with or without a preamplifier.

There are no user serviceable parts inside but that's just as well because Zen Amps very seldom break. This is why they have a lifetime warranty to the original owner.

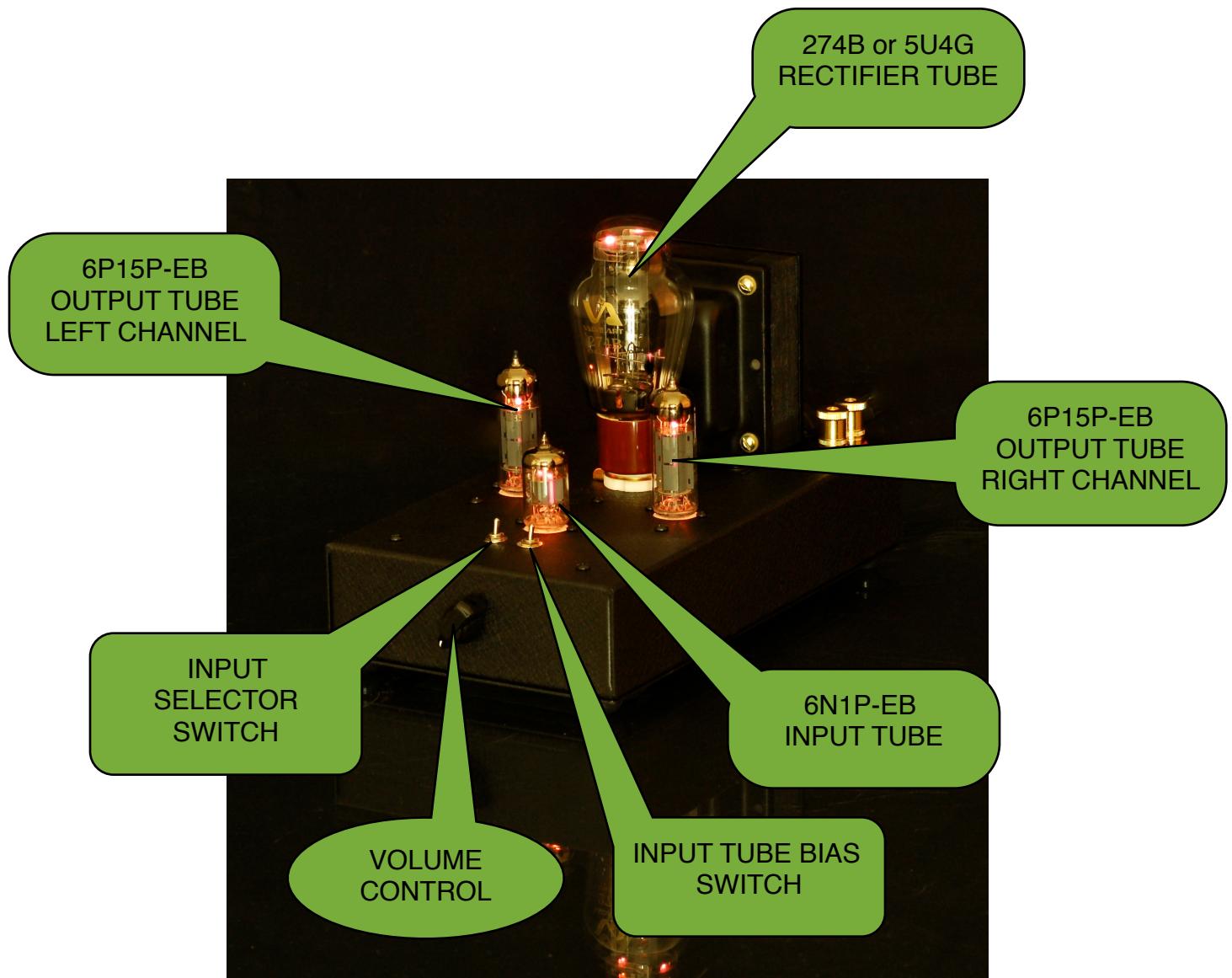
Tubes are inexpensive, last a long time, easy to find and have been proven to sound better than the popular 300B's or 2A3 triodes because they are faster and more neutral. You will never have to wonder what the amp would sound like with better tubes because there are no better tubes than the Russian military spec long life, thick glass, gold grid, plated pinned tubes that shipped with it.

Zen Amps are transparent enough that you really will hear large differences in sound quality between different cables, sources, and even tubes.

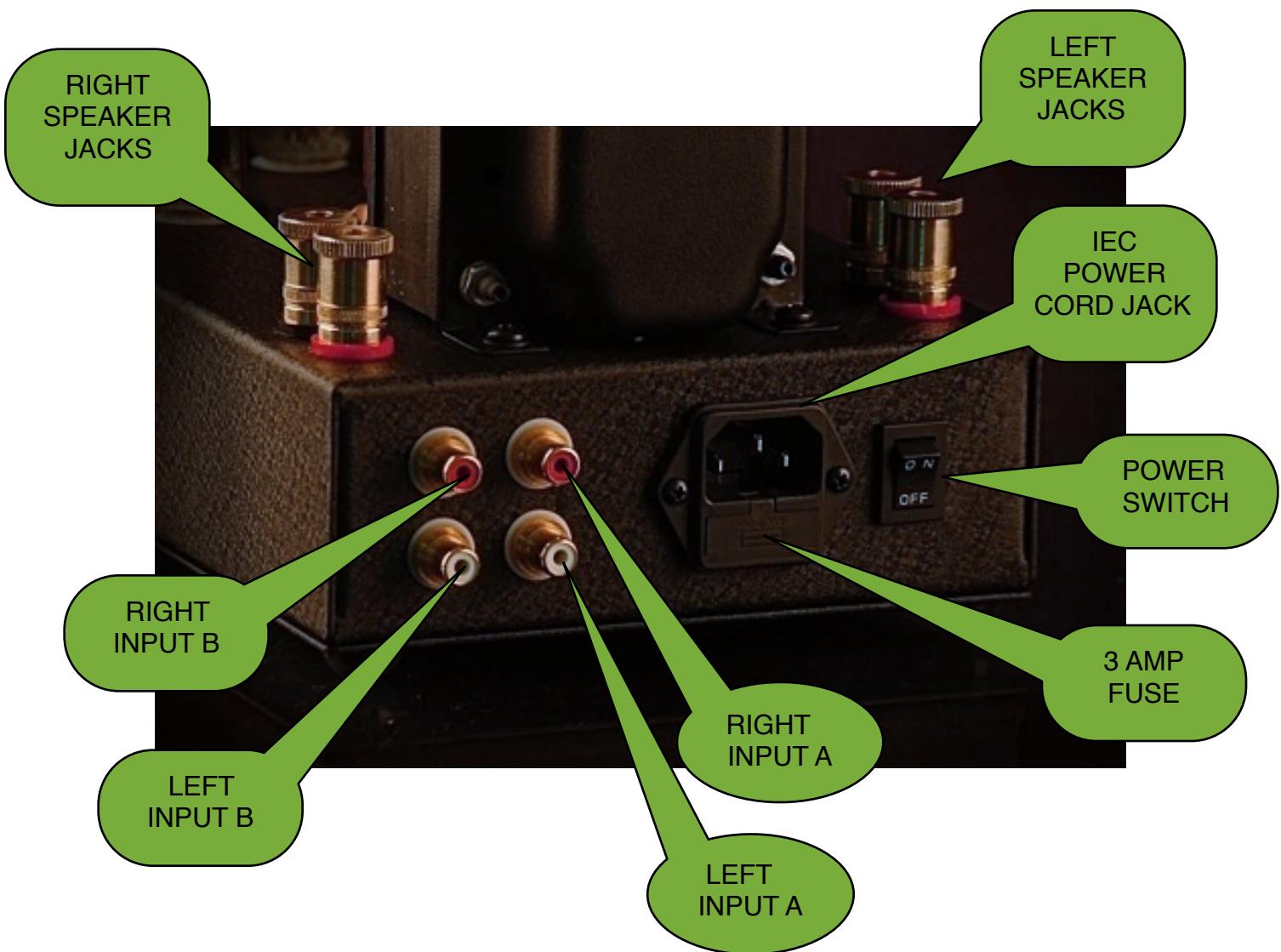
A Zen Amp is so stable, and so overbuilt that you can't blow one up no matter what speakers you hook it to, or even if you short the speaker wires together. A Zen amp clips so gracefully that combined with it's low power, it is virtually impossible to blow up your speakers with one. Another reason why we can offer a lifetime warranty.

Zens can be bridged into monoblocks, meaning you can connect both channels together for nearly three times the power to drive a single speaker. This way you use two amplifiers, one per speaker for even higher performance.

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TUBES - output

The SuperZen uses a single EL84/6BQ5 output tube per channel. It is also compatible with the Russian SV83 and the premium Russian 6P15P-EB extended life tubes, which is what we ship with the amp. There is no better sounding output tube than these because of their amazing speed and transparency. This is possible because these N.O.S. output tubes are left over from the Russian Cold War where they were used as video tubes in radar displays. A video tube has far wider bandwidth than an audio tube which is why the bass and treble are so extended and transparent sounding.

A Technical side-note regarding the unique fidelity of the SuperZen's output tubes:

We took the transparency a step further with what we call the Hazen Grid Mod, aka Christmas Comes Early Mod, where we couple the suppressor grid to the cathode through a capacitor adding great clarity to the tube by reducing stray electrons that typically bounce off the plate and reattach themselves in a different location due to the potential on the suppressor grid. This pushes this popular tube up the fidelity later even higher and as a result handles stray electron bounce better than expensive directly heated triodes like the 300B. Another advantage to using this output tube configuration is that it's quiet.

Many 300B amplifiers that do not employ ultra expensive power supplies will have more hum than a SuperZen.

Expect output tubes to last approx 6000 hours.

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TUBES - input

The smaller 9 pin input tubes in this amplifier are dual triodes meaning the tube does both channels. This is handy because it ensures the signature of the tube is maintained across both channels with no variations. It also makes rolling tubes easy because changing just one tube changes the sound of the entire amplifier.

The tube used is our favorite Russian NOS military grade 6N1P-EV. (In Russian that reads 6h1n-EB, which is what is printed on the tube) Alternately you can use 6922's which are a touch less warm but slightly more dynamic. Using 6DJ8's may or may not work depending on the brand and condition of the tube. This is because the voltages used are on the max end of what a 6DJ8 likes to see. There are two grades of this tube the better tubes have shiny plated pins, while the consumer grade are un-plated and dull looking.

Expect input tubes to last aprox 6000 hours.

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TUBES - rectifier

The rectifier tube in this amplifier is located directly in front of the power transformer. DO NOT TOUCH IT WHEN IT IS ON as it will be HOT and WILL burn your hand. Same for all of the tubes! Of course this is normal for all tube amps.

The SuperZen ships with a version of the attractive looking 274B rectifier that works well in the amp. Not all brands of 274B's are compatible. We recommend if you want to try a different rectifier to see what effect it has on the sound, use a good 5U4 or 5U4G. *There are many different brands of 5U4 type rectifiers both in New Old Stock (NOS) and in current production. Each will have a subtle effect on the sound of your amplifier. Different brands of the same tube will also sound different.*

There are also some compatible substitutes that you can try which include 5Y3GT and 5AR4. The 5AR4 is an indirectly heated rectifier with a soft start up so it may be a bit more expensive than the 5Y3GT and 5U4.

A popular rectifier tube that many people try to substitute is the 274B. There are different manufactures and different types of 274B rectifier tubes. Of the ones we've examined, most required no more than a 10uf capacitor in the first section of the power supply. Very few tubes amps today use that small of a value. The SuperZen uses a 47uf capacitor in this location which can cause some types of 274B's to arc on start-up and thus reduce the life of the tube. The 274B we ship with the amplifier is compatible with the 47uf capacitor which is a big part of the reason for including it with the amp.

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CLIPPING

With 6N1P input tubes and a standard 2 volt source such as a CD player, the volume control can typically reach 2/3rds before the amp runs out of steam (clips). Of course if you have a source with higher than 2 volts of output, the amp will clip sooner.

SPEAKER BINDING POSTS

The SuperZen features heavy duty (almost bomb-proof) connectors for the speaker wires. They are the standard 5-way posts with standard spacing. They accept banana jacks, large spades, or bare wire up to 10 AWG in thickness. The are color coded with a RED and BLACK base. Black is the NEGATIVE speaker connection and RED is the positive speaker connection. In this amplifier (unlike most) the two black speaker jacks are NOT connected together and or tied to ground.

BRIDGING INTO MONO

You can bridge both channels into one by simply connecting the Left Channel + speaker binding post to the Right Channel - speaker binding post by using a short 8 inch piece of wire. The two binding posts that you left alone will be used to power the speaker.

INPUT JACKS

The input jacks are standard single-ended RCA type connectors for consumer grade interconnect cables.

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POWER UP

The power switch is located on the left rear of the amp. It will take approximately 30 seconds for the tubes to warm up after you turn on the switch. You can watch this happen by looking at the tubes because they will begin to glow

As a general rule is it always best to have speakers hooked up to the amp whenever it is on. If you have a volume control and IF you have it turned all the way down, it is OK to have the amplifier on without speakers connected for brief periods of time. Having NO speakers connected and the volume control all the way up with music playing can damage the output transformers. This is common for all tube amps except that MOST will absolutely fail if this is done and so far no Decware amp ever has but why tempt fate?

SHORTING SPEAKER WIRES

When your tube amp is on and you want to unhook your speaker wires without turning the amplifier off, it is an acceptable practice to SHORT the speaker wires TOGETHER. Yes, it's true, this protects the output transformers from operating without a load. They can handle a dead short ALL DAY LONG without issue. This is JUST THE OPPOSITE of many solid state amplifiers, which as you may know, will blow up instantly if you short the speaker wires together, even for just a split second.

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DECWARE TRANSFORMERS

Since the output transformer is the only component your hearing other than the two resistors and one capacitor inside the Superzen it should become obvious that this is a critical component relative to the overall fidelity of the amplifier. And given that, the quality of the power transformer and power supply in general is at the heart of the amplifiers performance.

Our transformers cores (shown left) are made with M-6 29 Gauge - 0.014" (0.355 mm) Grain Orientated Electrical Transformer Steel Lamination with steam blue oxide on the surfaces and edges to minimize stray losses between laminations.



This squared hysteresis loop iron-silicon alloy was expressly developed to provide lower core loss with higher permeability in the rolling direction. Grain oriented laminations are supplied in the stress relief annealed condition. The elementary patterns of the crystals in the material are "oriented", or arranged so that the axis of easiest magnetization is nearly parallel and aligned in the direction of rolling. The alignment is accomplished by a special cold-rolling and annealing

processes. This allows the product to withstand more severe vibration and shock and enables the following:

1. Lower core losses as a consequence of design.
2. Higher initial permeability.
3. Higher permeability at higher inductions.
4. More stable VA/Temperature relationship over a wide range of ambient temperatures.
5. Most importantly, Superior Bandwidth and The Coherency Decware amplifiers are famous for.

The stacking of these cores, the wire and interleaving are trade secrets, and you can certain that Chinese built transformers which are so inefficient they have to be twice the physical size to do half as much, can't compete. You can relax in knowing you have the best.

The SuperZen is designed to have it's maximum power into 4 or 8 ohm speakers depending on which output transformer it was built with. Many people have successfully run speakers as low as 2 ohms on the 4 ohm transformers and as high as 16 ohm on the 8 ohm transformers.

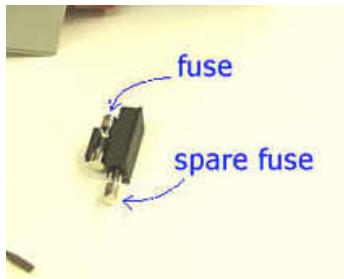
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LOUDSPEAKERS

We find that some speakers rated as low as 90dB 1w/1m get loud enough on this amp to fill a smaller sized room with a nice full sound. However, the speakers rated at 94dB or higher are considered ideal for larger spaces.

POWER CORD / FUSE

Your amplifier has the highest quality fused IEC connector available. It is SUPERIOR to the Gold Plated Chinese units that are rebranded and passed off as expensive audiophile gear -at a ridiculous price. This is important because if you choose to use a high grade audiophile power cord it makes no sense to plug it into a 50 cent IEC connector, which btw is what is on MOST amplifiers today - even expensive ones.



The fuse is a 3 amp, 20mm glass fuse. You can use fast or slow blow type replacements in the amp. It is located INSIDE the IEC connector. To access it, remove the power cord and take a small screwdriver to pry the little door open. It will come completely out of the IEC connector and not only holds the fuse, but has a spare fuse in it as well.

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GROUND LOOPS, POWER STRIPS, HUM

Whenever we connect more than one audio component together we run the risk of creating a ground-loop which causes hum.

A ground loop happens when the path to ground in one component finds an easier (less resistive) path through another component via the ground or shield wire in your interconnects. This is a common problem when components are plugged into different outlets or a power strip is used, as the resistance varies at the ground point of each receptacle.

Ways to combat the problem are - try to plug everything into the same outlet when possible, do not use power strips, try to keep the length of the power cords the same.

If all else fails, you can try lifting the ground on one or more component until the hum goes away.

How to tell if you have a ground loop causing hum - simply remove all your interconnects from the input jacks of your amplifier so that the only thing hooked to it is your loudspeakers. You should hear no hum on all but the most efficient speakers and even those would sound quiet from the listening chair some 6 or 8 feet back. If you do hear hum, then it's likely the amplifier assuming your speaker wires are not wrapped around a power cord somewhere. The most likely cause if it is the amplifier itself would of course be tubes. Start by installing a new rectifier tube and see if that corrects it. If not you can systematically try the remaining tubes in the amplifier.

If the amp is acceptably quiet just hooked to your loudspeakers with no inputs connected, then hook your inputs up one component at a time and listen for hum. If you get hum, then you either have a ground loop between that component and the amplifier, or that component is bad.

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BREAK-IN also known as BURN-IN

When your amplifier is new, it will not sound as good as it does when it's several months old. The reason for this is the internal parts breaking in. The process typically involves the amp sounding a little harsh, or a little muddy, or having premature distortions when run at higher volumes. It can change from one to the other in as little as 15 minutes time. This process usually completes in less than 100 hours of use, so just a few days really. Of course after the initial burn-in process, the amp will continue to season and refine over several months.

SEASONING

The older your amplifier gets (up to 30 years) the better it will sound. This is why used Zen amps go so fast on audio marketplaces around the internet. Many times the amps will bring as much or more than the original purchase price in the used market. The reason for this is mainly the output transformers simply sound better the longer they're used.

SOUND QUALITY

The fidelity of the amplifier, it's frequency balance, pace, transparency, imaging and sound stage are extraordinary due to the small number of parts to get in the way of the music. That said, you will only ever hear it sound as good as the weakest link in your system, which could be cables, a preamp, your source component. The only way to hear how good the amplifier CAN sound would be to hook an analogue master tape machine with a live two track master tape where the recording was done with top notch microphones and engineering. Even the worlds most expensive DAC and TRANSPORT will not sound as good, so obviously a 2500.00 DAC and transport is going to be a step down, and a 500.00 CD player is going to be another rather large step down. That means you WILL handicap your amplifier, the variable being HOW MUCH. Moral of the story is that given the choice to replace this less than two thousand dollar amp (wholesale price) with one 10 times as expensive will sound NO WHERE NEAR as good as keeping this amp and spending 10 times as much on a new source.

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SOUND STAGE

Decware amplifiers are a benchmark for holographic sound where the music is completely 3D. In fact many people who watched movies using a two channel Decware amplifier thought there were 5 speakers playing. That said, give yourself a chance to experience it by occasionally pulling your speakers out into the room, several feet away from the walls. Tow them in to create an X just in front of your face and sit anywhere from 4 to 6 feet back. Close your eyes and we'll see ya when you return to Earth.

WARRANTY

Your amplifier comes with a lifetime warranty to the original buyer. It covers defects in parts or labor. If you sell your amp for some reason, the buyer can return the amplifier to us for inspection and any updates at which point we can offer to transfer the lifetime warranty to him or her for a reasonable fee.

If your amp needs to return to the mothership, please call us first or at least e-mail with a description of the problem. Statistically 50% of all amps sent here for repair have nothing wrong with them. We can often head this off at the pass by consulting you by phone and helping you troubleshoot the problem. Decware amps are built to outlast you, and are frankly damn hard to break.

Returns should be sent to our main office. Please use the Return Form on our web site for the correct address and required information.

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FINAL NOTE

We want this to be the best sounding amplifier you've owned and since these amps are like our children we have a vested interest in their continued success. Please call us any time you have questions or need advise on how to improve your sound, or room acoustics. We want you to love this thing as much as we do, and will bend over backwards to make sure you do.

-Steve Deckert

-owner of Decware and designer of Decware amplifiers.

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